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DOCKET NO.: 4835

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
IN THE MATTER OF THE APPLICATION FOR PATENT

OF: Werner BERNZEN et al. | ART UNIT: 3661

SERIAL NO.: 10/523,139 | CONF. NO.: 6151

FILED: July 1, 2005

FOR: METHOD FOR DETERMINING A STEERING TORQUE WHICH ACTS WHEN A
STEERING WHEEL IS ACTIVATED IN MOTOR VEHICLES

COMMISSIONER FOR PATENTS
P.O. BOX 1450
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September 16, 2008

INFORMATION DISCLOSURE STATEMENT WITH CERTIFICATE OF MAILING

Dear Sir:

- 1) Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98 applicants enclose a Fifth Form PTO-1449, and copies and English abstracts of references AZ and AA2 cited thereon.
- 2) This Information Disclosure Statement is being filed before the mailing of a first Office Action on the merits, according to the available status information. Thus, in accordance with 37 C.F.R. 1.97(b)(3), no fee is due.
- 3) References AZ and AA2 are accompanied by English abstracts and English translations of the claims.

4) JP 2002-029437 was cited as reference D1 and JP 07-83949 was cited as reference D2 in a Japanese Office Action issued on June 25, 2008 in a counterpart Japanese application. Regarding these references in comparison to the Japanese application, the Japanese Examiner made the following assertions. The Japanese Examiner's assertions are not adopted or ratified as accurate by the applicant, but are submitted for the US Examiner's consideration of the possible relevance of the references. With regard to the inventions in claims 1, 2 and 6, see the cited documents D1, D2. D1 discloses that the interference torque is estimated from values which include steering angle (steering angle θ) and the vehicle speed (vehicle velocity V) in order to provide the steering torque with reduced the interference torque (See columns [0072]-[0083], Figs. 11-20). D2 discloses that the interference torque is estimated from values which include the drive torque (drive torque T1) (See columns [0024]-[0039]). With regard to the inventions in claims 3 and 4, refer to Fig. 6 of D2 especially. With regard to the invention in claim 5, refer to Fig. 19 of D1 and Equation 10 of D2 especially.

5) JP 2002-029437 discloses the state equations 10, 11, 12 and 13 in Fig. 18, wherein " ϕ " is a yaw rate, " ϕ_r " is a yaw angle, " y_{cr} " is a lateral displacement of the vehicle from a target line, " θ " is a steering angle, " i " is a control current for motor 5, " ρ " is a road curvature, " v " is a vehicle speed, " T_d " is a steering interference, and " ω " is a white noise. The observer 84

estimates an interference torque " T_d " from the current " i ", the road curvature " ρ ", the steering angle " θ " and the lateral displacement " y_{cr} " by setting an observer gain matrix K_e .

- 6) JP 07-083949 discloses the state equation of the wheel 14 in equation (4), wherein " ω_r " is an angular velocity of the rim side portion 28 of the wheel 14 (as shown in Fig. 6), " ω_b " is an angular velocity of the belt side portion 30 of the wheel 14 (as shown in Fig. 6), " θ_{RB} " is a torsion angle between the rim side portion 28 and the belt side portion 30, " T_1 " is a drive torque applied to the rim side portion 28, " T_d " is a torque from the road, i.e. a sum of the interference torque and rotational load torque, " K " is a spring constant of the torsion spring 32 between the rim side portion 28 and the belt side portion 30, " J_r " is an inertial moment of the rim side portion 28 and " J_b " is an inertial moment of the belt side portion 30. The interference torque w_2 to be estimated is expressed as follows:

$$w_2 = (- 1 / J_b) T_d + (\Delta K / J_b) \theta_{RB}$$

The state equation including the interference torque is expressed as equation (10), wherein approximately setting $w_2' = 0$. The observer 52 estimates " ω_r ", " θ_{RB} " and " w_2 " from the angular velocity " ω_r " by setting an observer gain $[G]$. Although the Japanese Examiner cites Fig. 6 of JP 07-083949 with respect to claim 3, Fig. 6 only discloses the circumferential force T_d of the wheel 14 and does not disclose the wheel normal force or wheel lateral force.

- 7) The Examiner is requested to consider all references of record, return an initialed copy of the enclosed Form PTO-1449, and ensure that all references of record are printed on any patent issuing from this application.

Respectfully submitted,

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Enclosures:
postcard,
Fifth Form PTO-1449,
2 references,
2 English abstracts

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CERTIFICATE OF MAILING:

I hereby certify that this correspondence with all indicated enclosures is being deposited with the U. S. Postal Service with sufficient postage as first-class mail, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below.

Karin Smith - September 16, 2008

Name: Karin Smith - Date: September 16, 2008